

to 3, d=0 to 2, e=0 to 3, f=0.01 to 3, g=0 to 3, h=0 to 3, and i is the atomic ratio of oxygen necessary for satisfying the valency of each component other than oxygen).

By
Cont

DISCUSSION OF THE AMENDMENT

Claim 1 has been amended by replacing the term "using the precipitate as a material for catalyst-constituting elements" with the equivalent --forming a catalyst from the precipitate as a source material for said catalyst--. The amendment is supported in the specification beginning at page 10, line 20, which describes that the precipitate is a source material for a new catalyst, and there is no restriction limiting the new catalyst to the same material which became the used catalyst. Claim 4 has been amended accordingly. Claims 2 and 6 have been amended by replacing the term "the" with --an--, before "ammonium root". Finally, Claim 8 has been amended by inserting formula (1) therein.

No new matter has been added by the above amendment. Claims 1-11 remain pending in the application.

REMARKS

The rejection of Claims 1, 2, 4-6, and 8-11 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 4,165,296 (Ishii et al), is respectfully traversed.

The present invention relates to a process for producing a catalyst, using a compound recovered from a used catalyst, as a source material for the catalyst. As recited in above-amended Claim 1, the present invention is a process for producing a catalyst, which comprises dispersing, in water, a used catalyst containing at least molybdenum, an A element (at least one element selected from the group consisting of phosphorus and arsenic) and an X element (at least one element selected from the group consisting of potassium, rubidium and

cesium), adding thereto an alkali metal compound and/or ammonia solution, then adjusting the resulting mixture to pH 6.5 or less to generate a precipitate containing at least said molybdenum and said A element, and forming a catalyst from the precipitate as a source material for said catalyst.

Ishii et al discloses a phosphorous-molybdenum-alkali metal-containing catalyst for the gas-phase oxidation of an unsaturated aldehyde to an unsaturated carboxylic acid, which is regenerated by treating it with an aqueous solution containing ammonia and hydrogen peroxide or ozone. Ishii et al further discloses that nitrate ion may be present during regeneration, which increases the effect of the regeneration (column 3, lines 1-2). According to Ishii et al, it is thought that the increased effect is due to nitrate ion combining with ammonium ion to form ammonium nitrate which is removed during a calcining treatment (*id.* at lines 2-5). As the Examiner notes, Ishii et al discloses nitric acid or ammonium nitrate as a source of nitrate ion (column 2, lines 36-39). The solution is then heated, and then the solvent is evaporated, leaving a solid residue (column 3, lines 51-56).

Regardless of the source of Ishii et al's nitrate ion, Ishii et al neither discloses nor suggest the presently-recited steps of adding an alkali metal compound and/or ammonia solution, and then adjusting the resulting mixture to pH 6.5 or less. It is noted that Applicants are claiming a process, not a product, and such claims must be treated accordingly. Ishii et al does not disclose or suggest any adjustment. The Examiner appears to suggest that the presently-recited adjustment is inherent in carrying out Ishii et al's process. However, if any adjustment occurs in Ishii et al, it is opposite to that of the present claims, in that Ishii et al discloses a general procedure for carrying out regeneration which involves combining their deactivated catalyst with a nitrate ion source **prior to** adding aqueous ammonia (column 3, lines 40-47). See also all the examples therein, wherein in each one where nitrate ion was

added, it was added before the ammonia. Thus, with such an adding order in Ishii et al, the pH increases from a low value to a high value, resulting in an alkaline mixture. In the present invention, on the other hand, the pH decreases from a higher value to 6.5 or less, and the mixture becomes acidic. Moreover, rather than a precipitate forming, as required by the present claims, Ishii et al evaporates a solvent, leaving a solid residue.

For all the above reasons, it is respectfully requested that the rejection over Ishii et al be withdrawn.

The rejection of Claims 1-11 under 35 U.S.C. § 112, second paragraph, is respectfully traversed. Indeed, the rejection would appear to be moot in view of the above-discussed amendment. Note, however, with regard to the term "ammonium root" its function and meaning is described in the specification beginning at page 8, line 8.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

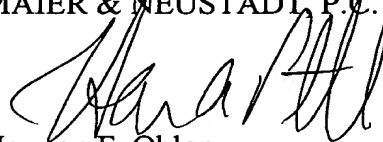
Applicants gratefully acknowledge the Examiner's indication of allowability of the subject matter of Claims 3 and 7. Nevertheless, Applicants respectfully submit that all of the

presently-pending claims in this application are in immediate condition for allowance.

Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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IN THE CLAIMS

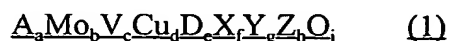
--1. (Amended) A process for producing a catalyst, which comprises dispersing, in water, a used catalyst containing at least molybdenum, an A element (at least one element selected from the group consisting of phosphorus and arsenic) and an X element (at least one element selected from the group consisting of potassium, rubidium and cesium), adding thereto an alkali metal compound and/or ammonia solution, then adjusting the resulting mixture to pH 6.5 or less to generate a precipitate containing at least said molybdenum and said A element, and [using] forming a catalyst from the precipitate as a source material for [catalyst-constituting elements] said catalyst.

2. (Amended) A process for producing a catalyst according to Claim 1, wherein the amount of [the] an ammonium root in the mixture before adjustment to pH 6.5 or less is 0.5 mole or more relative to mole of the A element.

4. (Amended) A process for producing a catalyst according to claim 1, wherein the precipitate is heat-treated at 200 to 700°C and then used as [a] said source material [for catalyst-constituting elements].

6. (Amended) A process for producing a catalyst according to Claim 5, wherein the amount of [the] an ammonium root in the mixture before adjustment to pH 6.5 or less is 0.5 mole or more relative to mole of the A element.

8. (Amended) A process for producing a catalyst according to Claim 1, wherein the produced catalyst is a catalyst for production of methacrylic acid by gas phase catalytic oxidation of methacrolein, having a composition represented by the following formula (1):



(wherein Mo, V, Cu and O are molybdenum, vanadium, copper and oxygen, respectively; A is at least one element selected from the group consisting of phosphorus and arsenic; D is at least one element selected from the group consisting of antimony, bismuth, germanium, zirconium, tellurium, silver, selenium, silicon, tungsten and boron; X is at least one element selected from the group consisting of potassium, rubidium and cesium; Y is at least one element selected from the group consisting of iron, zinc, chromium, magnesium, tantalum, manganese, cobalt, barium, gallium, cerium and lanthanum; Z is sodium and/or thallium; a, b, c, d, e, f, g, h and i are each the atomic ratio of each element; when b is 12, a=0.5 to 3, c=0.01 to 3, d=0 to 2, e=0 to 3, f=0.01 to 3, g=0 to 3, h=0 to 3, and i is the atomic ratio of oxygen necessary for satisfying the valency of each component other than oxygen).--